

Resume of Jeffrey D. Hyatt

Capabilities

For the last 27 years I have specialized in conducting mechanical component and system testing engineering, mechanical system failure analysis, identification of materials failure mechanisms and scientific accident reconstruction.

Scientific testing and complex test engineering:

As one of the most senior members of the ATS engineering staff I have had the responsibility to support our customer requests for engineering testing by designing and conducting these tests. These tests have included but are not limited to mechanical structural components of vehicles and products, hydraulic systems and their components, complete vehicles and their components, aircraft and aircraft sub-system components, mechanical fasteners systems and performance, firearms manufacturer compliance and component testing to SAMI and manufacturer specifications, testing of consumer products for safety and performance, mechanical testing and evaluation of building structural components, design evaluation and performance testing of outdoor power equipment, structural design evaluation and testing of ladders and scaffolding, testing and design performance evaluations of automobiles and their components, testing and design evaluation of tractor trailers and their components, testing and design performance evaluation of motorcycles and their components, testing and design performance evaluation of vehicle and aircraft tires and wheels, testing and design performance evaluations of golf car and personal transport vehicles (PTV), testing and design evaluation of off road and industrial trucks and their performance, testing and design performance of fall restraint equipment.

Conduct and coordinate technical investigations of product failures, industrial, automobile and aircraft accidents.

Perform research and evaluate designs to determine compliance with the appropriate industry standards and governmental regulations.

Evaluate and test mechanical systems for maintenance deficiencies, design defects and manufacturing defects.

Areas of Previous Responsibility

Investigate automotive, aircraft and industrial accidents dealing with product defect and maintenance deficiency issues.

Reconstruct aircraft, automobile, truck, motorcycle, and pedestrian accidents.

Conduct and coordinate accident site investigations as well as vehicle and product inspections. Perform product and prototype testing of various devices and systems to specific government regulations or industry standards.

Perform vehicle and mechanical system design defect analysis.

Perform specialized mechanical device and system certification testing.

Education and Specialized Training

American Welding Society, Certified Weld Inspectors Course, 2017:

40 hours of instruction on the specialization and practice of welding inspection, application of welding codes and the principles of advanced welding processes

Society of Automotive Engineers, (SAE); Tire Forensic Analysis, SAE ID, #C1424, 2013:

16 Hours of Class room instruction in tire forensics and failure analysis.

Society of Automotive Engineers, (SAE); Hydraulic Brake Systems for Passenger Cars and Light Trucks, September 2005:

40 hours of instruction in the specifics of vehicle hydraulic brake system and component design, analysis, testing and regulatory compliance.

Bendix Air Brake Systems Training, 2001:

40 hours of instruction regarding the specifics of vehicle air brake system and component design, analysis, testing and regulatory compliance.

University of Southern California, School of Engineering- Aircraft Accident Investigation, 2000:

80 hours of specialized instruction regarding aviation accident investigation; including aircraft control systems, power systems, braking systems, impact analysis and dynamic analysis.

ASM International Principles of Failure Analysis, 1998:

40 hours of specialized training in identification of fracture modes, corrosion identifying effects and basic fractography of industrial metals.

Northwestern University Traffic Institute, Traffic Accident Reconstruction I, 1996

80 hours of specialized principles and techniques of scientific vehicle accident reconstruction, vehicle impact analysis, analytical speed analysis by skidding and vehicle damage.

Southern College of Technology, Marietta, Georgia - B.S. in Mechanical Engineering Technology, 1995

4 year Bachelor of Science degree granted by the University System of Georgia in the real world applications of mechanical engineering design principles.

DeKalb Community College, Clarkston, Georgia

Examinations and Certifications

F.A.A. Certified Private Pilot, 1991

State of Georgia Fundamentals of Engineering Exam, 1998

Georgia Engineer-In-Training (E.I.T.), No. 18979

Commercial Drivers License, Class A, (C.D.L.), 2003

Certified Weld Inspector (CWI), 2017

Experience

Applied Technical Services, Inc., Forensic Engineering Staff (1996 - 1999):

Applied Technical Services, Inc., Supervisor Forensic Engineering Department (1999-2004):

Applied Technical Services, Inc., Supervisor, Forensic Engineering Group, Materials Testing Department (2004 - August 2023).

Specialized Testing and Forensic Laboratory, LLC. Owner and Principal Investigator (August 2023 to Present).

Responsibilities included; vehicle accident reconstruction, vehicle systems failure analysis and testing, mechanical failure investigation, specialized material properties analysis, design and execution of specialized engineering and scientific testing projects, design of methods for vehicle and product performance testing.

- Investigation and analysis of failures involving all major systems of automobiles, light trucks and heavy trucks, including seatbelts, airbags, hydraulic brakes, air brakes, engines, transmissions, vehicle computer systems, anti-lock brakes, tire failures, axle and wheel separations, door latch and hinge integrity, locks and security systems.
- Hydraulic equipment testing and failure analysis.
- Aircraft accident investigations involving Part 91 and Part 135 aircraft
- Aircraft component failure investigations for General Aviation and Commercial Aviation. Conducted failure analysis of aircraft components revealing a defect that directly resulted in F.A.A. issuance of a repair directive.
- Conducted extensive structural testing and evaluation of handrail and guardrail systems
- Vehicle accident reconstructions using the latest methods and computer simulations
- Aircraft accident reconstruction

A.I. Automotive, Inc. (1992-1994)

- Diagnosed a wide variety of automotive system failures and product defects

Dixon Tom-A-Toe (1991-1992)

- Design of in-house fixtures-welding and fabrication of production fixtures-repair and maintenance of high voltage industrial machinery, industrial mechanic

Crissman Enterprises (1987-1992)

- Diagnose and identify an extensive array of automotive and truck component failures and defects

Professional Associations

Society of Automotive Engineers (SAE)

American Society of Mechanical Engineers (ASME)

American Welding Society (AWS)

International Light Vehicle Transportation Association, (ILTVA)

Standards Committee Participation

Member of the engineering subcommittee (ESC) for the ANSI/ ILTVA Z130 Golf Car standard

Member of the engineering subcommittee (ESC) for the ANSI/ ILTVA Z135 Personal

Transportation Vehicles (PTV) standard. **Member 2014 to 2020**

I have participated in the drafting and upgrading of the ANSI Z130 and ANSI Z135 vehicle standards. These committees establish the standards for the design, performance and manufacture of golf cars and Personal Transportation Vehicles (PTV), manufactured or sold in the United States and around the world.

I have participated with the committee members in providing design and performance guidance to the golf car manufacturing industry and the PTV industry.

PTV's are vehicles designed for on road use where government regulations allow.

The systems and design criteria involve vehicle steering, seating, brakes, lights, occupant safety systems, fuel containment, battery energy safety, speed, and vehicle stability.

As a member of the engineering subcommittee (ESC) it is our responsibility to evaluate other

standards such as those provided in similar vehicles, Society of Automotive Engineers test and performance specifications or standards and government regulations.

I have used my extensive experience as a vehicle test engineer, accident investigator and vehicle design evaluator to enhance my participation with the engineering subcommittee.

Materials Science and Fracture Analysis Experience.

In addition to my formal training in the many different areas of fracture identification, I have received specific training by the senior ATS metallurgists and polymer scientists in the visual, microscopic and scanning electron microscopic identification of various mechanical fracture and failure modes. Some of these modes are as follows:

- Identification of fatigue fractures
- Stress corrosion cracking (ESC)
- Brittle fracture indications in metals and some polymers.
- Ductile fracture indications
- Corrosion pitting

I have also been trained to conduct material evaluations by hardness testing. I have been specifically trained to conduct impact fracture toughness testing and interpret the results. I have been trained to conduct material strength testing by tensile methods and interpret the results.

I have specific experience in special metal processing techniques including hot forging, metal casting and heat treating of steel alloys.

Welding and Special Fabrication.

I have worked in the welding and metal fabrication field since 1991. Prior to obtaining my engineering degree I was employed as an industrial welder with experience in structural steel and the food grade stainless industries. I have maintained my practice of welding and fixture fabrication throughout my career in engineering testing. I am proficient in the techniques for structural welding and pressure vessel welding. I have regularly used these skills over the last 30 years for structural steel, vehicle/automotive welding, and pressure vessel fabrication. I am familiar with SMAW (stick welding), GMAW (mig welding), GTAW (tig welding) and regularly practice these processes. I have also worked with Submerged Arc Welding processes.

In addition to being a practicing welder, I have been credentialed by the American Welding Society (AWS) as a Certified Welding Inspector (CWI) since 2017. I have conducted numerous welding inspections over the years. These range from applying the requirements of AWS D1.1 for structural steel welding, to automotive welding, and food grade stainless welding.

Vehicle, Aircraft and Equipment failure and fire.

I have conducted hundreds of failure investigation involving vehicle component and system failures. These failures have included specific investigations into tires, bearings, engine and powertrain systems, transmission system investigations, hydraulic and airbrake system, airbag safety systems, seat belt systems. The types of vehicles range from motorcycles, automobiles to tractor trailers. I have also conducted similar failures involving aircraft.

I have led and directed multiple aircraft failure investigations ranging from power system, on board oxygen systems and fracture and failure identification of aircraft components.

I have conducted hundreds of failure investigation of off-road heavy equipment. Dozers, loaders, logging machinery, tracked excavators, skid steers, paving equipment, mowing machinery etc. These investigations

have ranged from rollover systems to electrical, hydraulic, and mechanical system failures. I have conducted and directed hundreds of fire investigations involving these same types of vehicles and equipment. With specific experience in fuel system failures, both liquid and compressed gas, hot surface ignition of fuels and materials, pyrophoric metals fires and explosive dust.

Examples of Specific Experience

Accident Reconstruction

I have worked in the vehicle and transportation accident reconstruction since 1996. I have investigated and reconstructed accidents involving:

- Horse drawn carriage vs, Minivan
- Tractor trailer crashes involving multiple different types of vehicles
- School bus crashes
- Reconstruction analysis of vehicle vs pedestrian crashes
 - Tractor trailer
 - Automobile
 - Railroad
- Rollover crashes
- Aircraft accident investigation and reconstruction
- Heavy equipment accident reconstruction.
 - Loaders
 - Dozers
 - Tracked Excavators
 - Forklift

I have qualified and testified in State and Federal court in accident investigation and reconstruction.

Engineering Testing

I have conducted thousands of engineering tests of products, equipment, components, and structures during my 27+ years at ATS. Some are listed below:

- Structural components
- Building elevator systems
- Building reinforcing structures
- Railing systems
- Consumer products
- Vehicle systems and structures.
- Aircraft systems and structures
- Metals and materials evaluations.
- High pressure component failure testing
- Crash testing
- Fall Arrest systems
- Fire Causes, Vehicles, equipment, and aircraft

Vehicle Hydraulic Brake Systems

I have conducted hundreds of vehicle hydraulic brake system evaluations, tests and failure analyses in the last 22+ years. Some of the areas I have tested and evaluated over this period are:

- Hydraulic brake master cylinder contamination failures
- Hydraulic brake master cylinder vacuum booster failures
- Hydraulic brake master cylinder hydraulic booster failures and testing
- Hydraulic brake system overheat boiling failures.
- Hydraulic brake system failures due to corrosion

Industrial Accidents

I have investigated the failures of equipment and machinery where serious injury or death has occurred. Some of these have been:

- Leaks or unintended releases of industrial or hazardous gasses.
- Failures involving lockout tag out.
- Safety and Fall arrest equipment use and failure.
- Lifting devices for personnel.
- Industrial lift truck accidents.
- Explosive releases of stored energy.
- Industrial Ammonia systems
- Pump and Machinery failures
- Steam and Steam piping systems under ASME.
- Boilers and Boiler failures.

Motorcycle Companies worked for directly.

Aprilia Motorcycle USA,
Harley Davidson Motorcycle

Tire Investigation Experience

1996 to 2003, Received specific instruction through ATS tire examination experts on the inspection and failure analysis of pneumatic vehicle tires.

I have personally conducted over 100 tire examinations of tire failures ranging from bicycle, automotive, motorcycle, heavy truck, and aircraft.

I have testified by deposition in federal court on Firestone Wilderness tire failures.

Consumer Product Experience

I have 27 years of consumer product testing. This testing ranges from testing and or certification for manufacturers, to testing of products involved in accidents and injury. Some of the products range from:

- Safety Glasses certification verification for impact
- Kitchen appliances
 - Blenders, both open and closed types
 - Pressure cookers
 - Beverage carbonators
 - Slicing equipment

- Stoves and Ranges
- Microwaves
- Utensils
- Lawn Equipment
 - Push mowers
 - Riding mowers
 - Blowers
 - Chain saws
 - Power Hedge clippers
 - Weed Trimmers
- Power Tools
 - Circular saws
 - Power Miter saws
 - Handheld grinding equipment
 - Wrenches
 - Socket wrench Tools
 - Impact Wrenches
 - Pneumatic cut off wheel equipment

Firearms Specific Experience

- Conducted investigations for large firearms manufacturers.
 - Ballistic Characteristics of bullets
 - Bullet structural and material analysis
 - Firearm structural integrity and manufacturing procedure.
 - Ballistic velocity and impact energy analysis.
 - Firearm assembly analysis
 - Firearm chamber pressure analysis
 - Familiar with applying NIJ, CPSC and SAAMI standards.
- Design and conduct special developmental testing for M-4/ AR platform rifles, IMM cycle testing.
- Design and operated FCG testing for manufacturer of M-4/AR platform rifles.
- Trigger and FCG safety testing.
- Conduct SAMMI and California drop testing for handgun safety.
- Firearm structural and material failure analysis, MIM, Investment Casting, Forging.
- Firearm impact testing.
- Forensic firearm examination and testing.